

I claim:

1. A method for treating a cardiac muscle disorder, the method comprising the step of administering a neurotoxin to a mammal.

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2. The method of claim 1, wherein the cardiac muscle disorder is a bradycardia.

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3. The method of claim 2, wherein the administration step is carried out by administration of the neurotoxin to or to the vicinity of a postganglionic parasympathetic neuron.

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4. The method of claim 2, wherein the administration step is carried by administration of the neurotoxin to or to the vicinity of a preganglionic parasympathetic neuron.

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5. The method of claim 1, wherein the cardiac muscle disorder is a tachycardia.

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6. The method of claim 5, wherein the administration step is carried out by administration of the neurotoxin to or to the vicinity of a preganglionic sympathetic neuron.

7. A method for treating a cardiac muscle disorder, the method comprising the step of locally administering a neurotoxin to a cardiac muscle, thereby treating the cardiac muscle disorder.

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8. The method of claim 7, wherein the local administration step is carried out by intrapericardial injection or infusion of the neurotoxin.

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9. The method of claim 7, wherein the neurotoxin inhibits formation or release of a neurotransmitter from neurons in the vicinity of the cardiac muscle.

10. The method of claim 9, wherein the neurotransmitter is acetylcholine.

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11. The method of claim 7, wherein the neurotoxin is a botulinum toxin.

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12. The method of claim 7, wherein the local administration step is carried out by cardiac catheterization.

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13. The method of claim 12, wherein the cardiac catheterization is carried out by: (a) inserting a catheter comprising (i) a first end and a second end, and (ii) a hollow needle attached to the first end of the catheter, into the circulatory system;

(b) threading the catheter to the site of the cardiac muscle disorder;

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(c) inserting the hollow needle into the cardiac muscle disorder site;

(d) injecting the neurotoxin into the cardiac muscle, and;

5 (e) removing the catheter from the circulatory system.

14. The method of claim 7 wherein the cardiac muscle disorder is an arrhythmia.

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15. The method of claim 7, wherein the neurotoxin is botulinum toxin A and the amount of botulinum toxin A locally administered to the cardiac muscle is between about 0.01 U/kg and about 35 U/kg.

16. The method of claim 7 wherein the neurotoxin is botulinum toxin A and the amount of botulinum toxin A locally administered to the cardiac muscle is between about 0.1 U/kg and about 30 U/kg.

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17. The method of claim 7, wherein the neurotoxin is botulinum toxin A and the amount of botulinum toxin A locally administered to the cardiac muscle is between about 1 U/kg and about 25 U/kg.

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18. The method of claim 7, wherein the cardiac disorder is a bradycardia.

19. A method for treating a cardiac arrhythmia, the method comprising the steps of:

(a) administration of a first antiarrhythmic drug, and;

(b) administration of botulinum toxin.

20. The method of claim 19, wherein the first antiarrhythmic drug is administered orally or parenterally.

21. The method of claim 19, wherein the botulinum toxin is administered intrapericardially or intracardially.

22. The method of claim 19, wherein the cardiac disorder is bradycardia.

23. The method of claim 19, wherein the first antiarrhythmic drug is selected from the group consisting of atropine, amiodarone, sotalol, quinidine, procainamide, diospyramide, lidocaine, mexiletine, flecainide, propafenone, beta blocking drugs, amiodarone, ibutilide and calcium blocking drugs.

24. The method of claim 23, wherein the first antiarrhythmic drug is atropine and salts and derivatives thereof.

25. The method of claim 19, wherein the botulinum toxin is selected from the group consisting of botulinum serotypes, A, B, C1, D, E, F and G.

5      26. The method of claim 19, wherein the botulinum toxin is botulinum toxin type A.

27. A method for treating bradycardia comprising the steps of:

- 10      (a) oral or parenteral administration of a first antiarrhythmic drug, and;  
    (b) intrapericardial or intracardiac administration of botulinum toxin type A.

15      28. A method for treating a mammalian cardiac muscle disorder, the method comprising the step of locally administering a therapeutically effective amount of a neurotoxin to a cardiac muscle.

20      29. The method of claim 28, wherein the cardiac muscle disorder is a bradycardia.

25      30. The method of claim 29, wherein the neurotoxin is botulinum toxin type A.

31. The method of claim 30, wherein between about 10 U and about 300 U of the botulinum toxin type A is administered by the local administration step.

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32. The method of claim 31, wherein between about 20 U and about 200 U of the botulinum toxin type A is administered by the local administration step.

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33. The method claim 32, wherein the botulinum toxin type A is locally administered to the area of the sinoatrial node.

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34. The method of claim 33, wherein the step of local administration is carried out by intrapericardial administration of the botulinum toxin type A.

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35. The method of claim 28, wherein the step of locally administering is carried out by an iontophoretic transmucosal administration of the neurotoxin.

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36. The method of claim 28, wherein the step of locally administering is carried out by placing a controlled release implant containing the neurotoxin in direct contact with a pericardial, epicardial or intracardial tissue surface.

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